NASA'S MISSION TO PLANET EARTH
EARTH PROBES
DATA INFORMATION SYSTEM
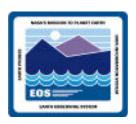EOS
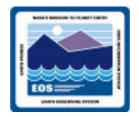EARTH OBSERVING SYSTEM
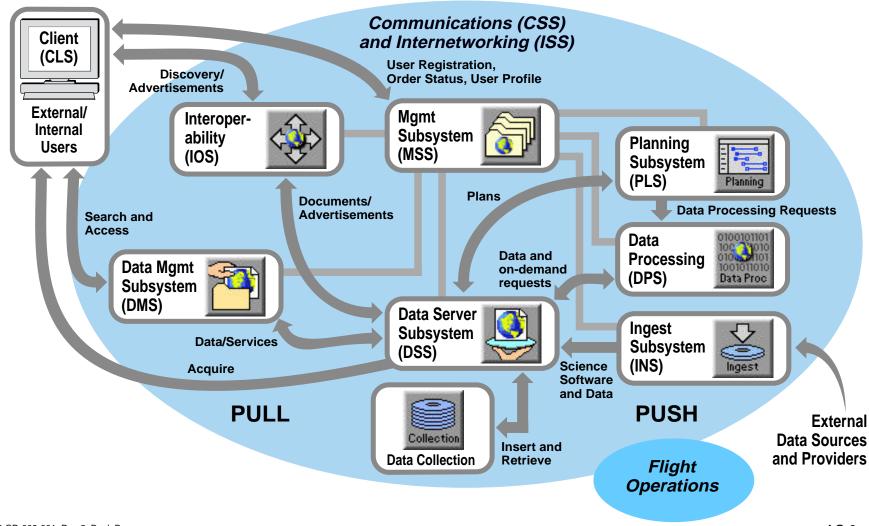
MSS Overview

Alan Gary

agary@eos.hitc.com

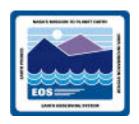**16 April 1996**

Subsystem Overview

- **ECS context**
- **Driving Requirements**
- **HW and SW Architecture**
- **COTS selections**
- **IDR & workshop issues workoff**
- **Prototypes and Trades**
- **Design changes from IDR**
- **305 Errata**

ECS Context

Communications (CSS) and Internetworking (ISS)

Client (CLS)

External/ Internal Users

Discovery/ Advertisements

User Registration, Order Status, User Profile

Interoper- ability (IOS)

Mgmt Subsystem (MSS)

Planning Subsystem (PLS)

Documents/ Advertisements

Plans

Data Processing Requests

Search and Access

Data Mgmt Subsystem (DMS)

Data Processing (DPS)

Data and on-demand requests

Data Server Subsystem (DSS)

Ingest Subsystem (INS)

Data/Services

Acquire

Science Software and Data

PULL

PUSH

Collection

Data Collection

Insert and Retrieve

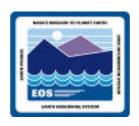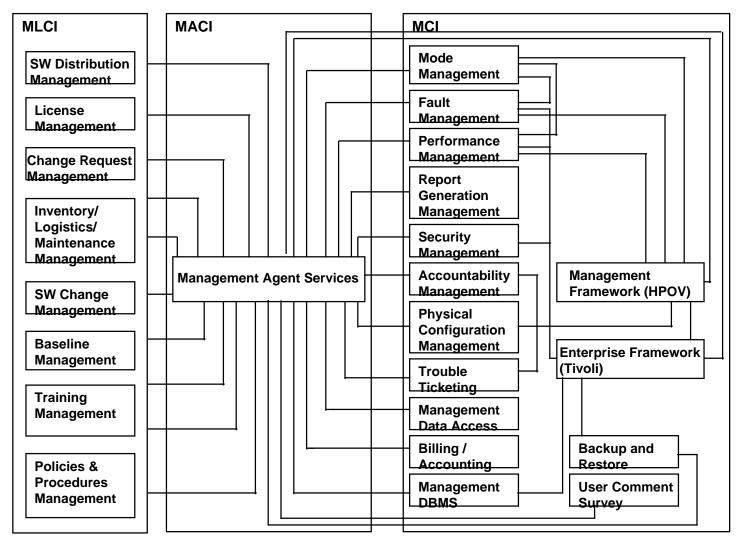**External Data Sources and Providers**

Flight Operations
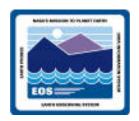
MSS Key Drivers

- **Autonomous management concept**
- **Policy flexible**
- **No single point of failure**
- **Scalability and evolvability**
- **Configurable**
- **High degree of automated monitoring**
- **Evolvable to SNMP2, CMIP, OMG**
- **Standards based**
- **COTS intensive (low risk)**
- **Common look and feel for operators**
- **Partitionable into domains**
- **System-Wide monitoring and coordination**
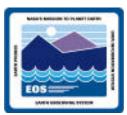
MSS Software Architecture Overview

MLCI

- SW Distribution Management
- License Management
- Change Request Management
- Inventory/ Logistics/ Maintenance Management
- SW Change Management
- Baseline Management
- Training Management
- Policies & Procedures Management

MACI

- Management Agent Services

MCI

- Mode Management
- Fault Management
- Performance Management
- Report Generation Management
- Security Management
- Accountability Management
- Physical Configuration Management
- Trouble Ticketing
- Management Data Access
- Billing / Accounting
- Management DBMS
- Management Framework (HPOV)
- Enterprise Framework (Tivoli)
- Backup and Restore
- User Comment Survey

Management Services

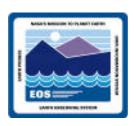| MSS Service	SMC	LSM
Common management service	Enterprise framework Management framework Mode management * Management Data Access	Enterprise framework Management framework Mode management * Management Data Access
Request tracking	ECS-wide request tracking*	Request tracking
Trouble ticketing	Problem tracking	Problem reporting & tracking
User contact log	Track user contacts	Log & track user contacts
User Comment Survey *	User feedback	User feedback
Report Generation *	Analysis of rollup reports from sites.	Site level service

* New for Release B

Management Services (cont.)

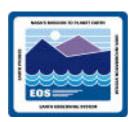| MSS Service	SMC	LSM
Fault management	Fault correlation * Problem determination Monitor & support	Detect Isolate Diagnose Recover
Performance management	ECS-wide trend analysis * Performance assessment	Statistics collection Performance analysis Site trend analysis * Site capacity planning
Accounting/Billing	Billing/Invoice * Disseminate pricing policy *	User registration Credit tracking Audit trail Price estimation * Accts receivable *
Security management	ECS-wide oversight Disseminate policy	Authentication, authorization, compliance audit, data privacy intrusion detection, data integrity

* New for Release B
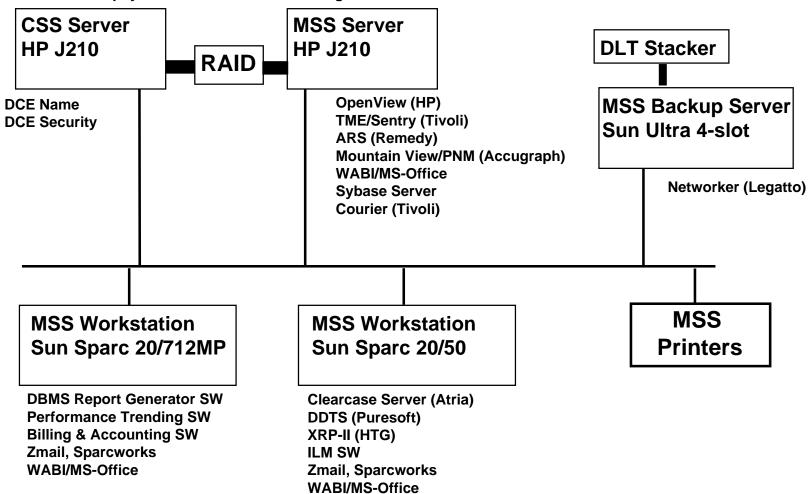
Management Services (cont.)

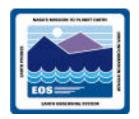| MSS Service	SMC	LSM
Configuration management	ECS-wide configuration control & baseline	Site level configuration control
Software distribution *	SMC distribute SW to site	install software distribute algorithms to SMC
Schedule coordination (Re-Use of PLS)	Coordinate ground events & cross-site dependencies	Schedule site support resources
Inventory management *	ECS-wide inventory	Site level inventory
Logistics management *	ECS-wide oversight	Monitor/replenish spares and consumables
Maintenance management *	ECS-wide reliability trend analysis	Monitor, schedule and coordinate maintenance

* New for Release B

Hardware Architecture Overview

Note: This is a physical view of MHWCI showing the COTS to MHWCI allocations.

CSS Server		MSS Server		DLT Stacker
HP J210	RAID	HP J210		

DCE Name
DCE Security

OpenView (HP)
TME/Sentry (Tivoli)
ARS (Remedy)
Mountain View/PNM (Accugraph)
WABI/MS-Office
Sybase Server
Courier (Tivoli)

MSS Backup Server
Sun Ultra 4-slot

Networker (Legatto)

MSS Workstation
Sun Sparc 20/712MP

MSS Workstation
Sun Sparc 20/50

MSS
Printers

DBMS Report Generator SW
Performance Trending SW
Billing & Accounting SW
Zmail, Sparcworks
WABI/MS-Office

Clearcase Server (Atria)
DDTS (Puresoft)
XRP-II (HTG)
ILM SW
Zmail, Sparcworks
WABI/MS-Office

COTS Selections

COTS Inherited from Release A

- **Sybase/SQR workbench**
- **Tivoli/TME**
- **HP-OpenView**
- **Remedy/ARS**
- **AccuGraph/MountainView**
- **Networker**
- **XRP-II**
- **ClearCase**
- **DDTS**
- **Peer**

New COTS in Release B

- **BAAS**
- **ILM Manager**
- **Statistical Analysis/Trending**
- **Report Generator**
- **HP9000/DCE 1.4**
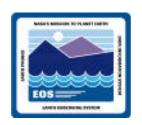
Status

- **All MSS Release B COTS selected**

Next Steps
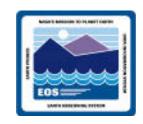
- **COTS integration**

MSS Functionality Provided by COTS
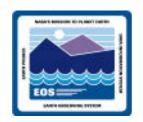
MSS functionality	COTS
Enterprise framework	Tivoli/TME Tivoli/Admin Networker
Management framework	HP-OpenView Peer/Optima SNMP dev kit
Mode management	HP-OpenView Peer/Optima SNMP dev kit
Management Data Access	Sybase
Request tracking	Sybase
Trouble ticketing	Remedy/ARS HTML
User contact log	Remedy/ARS
User Comment Survey	Sybase HTML

MSS Functionality Provided by COTS (cont.)
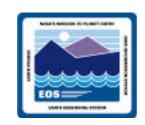
MSS functionality	COTS
Report Generation	Sybase/SQR
	Report Gen COTS
	Statistical Analysis/Trending COTS
	HTML
Fault & Performance Management	
Network devices	HP-OpenView
ECS applications	HP-OpenView
	Peer/Optima SNMP dev kit
System	Tivoli/EC
	Tivoli/Sentry
	Tivoli/Event Adaptors
COTS	HP-OpenView
	Peer/Optima SNMP dev kit
	Tivoli/EC
	Tivoli/Sentry
	Tivoli/Event Adaptors

MSS Functionality Provided by COTS (cont.)
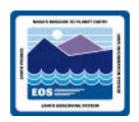
MSS functionality	COTS
Billing & Accounting	BAAS COTS Sybase
Security Management	HP9000/DCE Acct mgr SATAN (OTS) Tripwire (OTS)
Training Management	Sybase OA-tools
Policy & Procedures Management	OA-tools BB (OTS) Sybase

MSS Functionality Provided by COTS (cont.)

MSS Functionality	COTS
Configuration management	
SW configuration mgt	Clearcase
HW configuration mgt	Accugraph/Mountainview
Change control mgt	DDTS
Baseline mgt	XRP-II
License mgt	FlexLM
	iFOR/LS
Software distribution	Tivoli/Courier
Schedule coordination (Re-Use of PLS)	Sybase
Inventory management	ILM COTS
Logistics management	ILM COTS
Maintenance management	ILM COTS

IDR and Workshop Issues Summary

Status

- **IDR**
  - **Need for billing and pricing policies (TD#19)**
- **Ops Workshop**
  - **Common & consistent operator GUI (Tivoli/EC)**
  - **Integration of user services & operator tools (Tivoli/TME & Tivoli plus)**
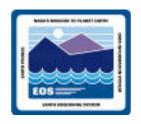- **Infrastructure Review**
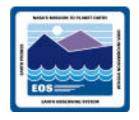 - **Error/Event logging**

Open Issues

- **BAAS**
  - **one userid - one account**

Next Steps

- **BAAS**
  - **working with science office and DAACs to evaluate the science user impact**
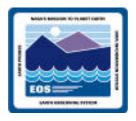 - **evaluating alternate design options**

IDR Issues

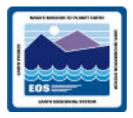| Issue	Origin	Status	Resolution
EOSDIS Policy	IDR RID # 9	CLOSED	TD#19 provided for billing & accounting
S/W Error scearion	IDR RID # 23	CLOSED	Concur, 604 part 2A contains the identified steps.
Support password free registration	IDR RID # 26	CLOSED	ECS will provide the capability to save order info on desktop
User group and billing issue	IDR RID # 31	CLOSED	ECS to survey user community to determine the the need for the requested functionality
DAAC-unique billing	IDR RID # 32	CLOSED	TD#19 provided for billing policy. DAAC-unique billing will be provide via the SMC

Ops Workshop Issues

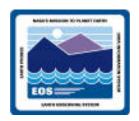| Issue	Origin	Status	Resolution
Define methods and tools to establish & manage modes	OWI #23	Accepted	305, Sec 6.1.1 defines methods & tools
Need a mechanism to display all elements within a mode	OWI #24	Rejected	The elements request to be displayed will need to be documented in the Test Plan
Provide customer with "dated" account info in the user profile	OWI #27	Accepted	305, Sec 6.2.3 identifies acct info
605 needs to address additional scenarios using various payments	OWI #29	Accepted	Will add additional scenarios in the next DID 605 release
Update flows to show written notification to users	OWI #31	Accepted	Will update workflows in the next DID 605 release
Provide workflow for a canceled order	OWI #32	Accepted	Will update workflows in the next DID 605 release

Ops Workshop Issues (cont.)

Issue	Origin	Status	Resolution
Provide an automated method for a guest user to submit a TT	OWI #38	Rejected	E-mail is the only automated method
Need to be able to assoc-iate multiple users/organ-izations with 1 TT	OWI #40	Accepted	305, Sec 6.9.3
Need to provide a way to store HTML submitted TT if Remedy down	OWI #41	Accepted	305, Sec 6.9.3
Expand pick list in TT to include data & other categories	OWI #42	Accepted	305, Sec 6.9.3. As agreed during Rel A opstele & GUI workshop
Operability among the tools needs to exist: User Contact/ARS/CCR	OWI #45	Accepted/ Rejected	Limited operability between User Contact Log and TT, related CCR # field in TT DB
Some record of a verifica-tion needs to be added as an extra check	OWI #46	Rejected	Design supports this entry in the resolution log. No need to add additional field to TT

Ops Workshop Issues (cont.)

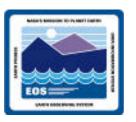| Issue	Origin	Status	Resolution
Request "non-repeatable" Trouble Ticket field.	OWI #48	Accepted	305, Sec 6.9.3. Added requested field/status
Could an e-mail API within the Order Tracking Tool be used to directly send order query results to the user?	OWI #68	Rejected	User has the capability to get order status. No requirement to provide this additional capability.

Prototypes and Trades

Status

- **Completed**
  - DCE Acct Mgt: trade Hal Software vs HP9000/DCE 1.4
  - Policy & procedures: trade DDSRV vs WWW vs BB
  - Mode management: white paper completed
  - SNMP: SNMP v1 vs SNMP v2
  - Training tracker: trade COTS/custom
- **Design Decisions**
  - HP9000/DCE 1.4, DAM, DCM & CDS browser
  - Re-use DDSRV for policy & procedures
  - Rel A will incorporate PF & MM infrastructure
  - SNMP v1 will remain the Rel B baseline
  - Training tracker will be custom developed
- **In Progress**
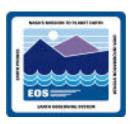 - Mode Management: Early COTS integration (HP-Openview)
- **Planned**
  - CORBA
  - SNMP v2

Key Mechanisms

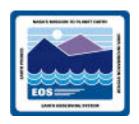**Mechanisms through which processes acquire or provide software services:**

- **Distributed Object Framework (DOF)**
  - **Mechanism for creating remote objects and invoking remote methods**
  - **Provides naming, security, threads, time, and RPC services**

- **Process Framework (PF)**
  - **Mechanism for incorporating infrastructures required to support distributed computing in the ECS environment**
  - **Provides process initialization and life cycle support**
  - **Sets parameters for naming/directory/security services**
  - **Interfaces to mode management, event logging, synchronous message passing**
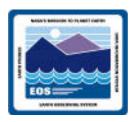
Key Mechanisms (cont.)

- **Request Tracking**
    - **Provides near real-time end-to-end status of selected requests (e.g., user orders, ingest, and system backups)**
    - **Provides access to resource cost information over the life of a request**

Design Changes from IDR

- **Incorporation of Key Mechanisms**
  - **Process Framework**
  - **Request tracking**
- **Architectural Changes**
  - **None**
- **Interface Changes**
  - **EBnet**
  - **ASTER gateway: billing and order status data flows**
  - **EDOS / SMC: PDS/EDS delivery records to SMC**
- **Functional Changes**
  - **None**
- **Open Design Issues**
  - **ASTER ICD not finalized (need by 8/1/96)**

305 Errata

- **Trouble Ticket Context: Sec. 6.9.1**
    - **EBnet & NSI trouble administration via Remedy/ARS**
- **Policy & Procedures Object Model: Sec. 5.10.3**
    - **DDSRV interface**